VISIT…

ArtSkills™
for a lifetime

EDUCATIONAL CURRICULUM GUIDE

UNDERSTANDING AND CONTROLLING COLOR

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FOREWARD

In our years in the art education field, we have found that many children become dissatisfied with their artistic ability and lose interest in creating art, often before they reach middle school age. When they compare their artwork to what they see in their textbooks or on the TV screen, it lacks the realism that makes other artwork come alive. Their desire for their work to be more realistic does not suggest that they are no longer expressive and creative; nor does it imply that they no longer want to use their imaginations. The need for realism is merely an expression of their need for control and logic. *The Start Smart®* series is designed for children who have reached this point. There is no reason that art cannot be taught in a logical and sequential manner, offering children a solid grounding in basic skills and techniques, the same skills and techniques learned by all the great artists throughout history.

The *Start Smart®* program begins where most children's innate skills and knowledge end, usually between the ages of 6 and 8. The skills of the average child of that age are:

- Basic color recognition and naming (red, yellow, blue, green, etc.)
- Ability to color in shapes
- Freehand scribbling
- Icon drawing (trees, houses, flowers, etc.)
- Familiarity with crayons, markers, colored pencils, and watercolors

Starting with these skills, we have developed a program that accomplishes two objectives:

- Teaches new skills about colors and how to apply them to artwork
- Maintains the student's interest in doing art by offering fun lessons

The focus of this series is to teach the students that there is logic to color and that they can use that logic to make their artwork look more realistic. They will learn in four different media that color is sequential and every color has lighter and darker versions (values). They will learn how to use those different values to create the appearance of 3-dimensional shape with highlighting and shading. They will learn how cast shadows reinforce the illusion of realism. We believe that once your students acquire these skills, they will enjoy making art and will continue to do so because of the personal success and positive reinforcement they receive from their art.

CONTENTS

All of the necessary materials are included in this set. The *Homeschool Start Smart® Set* has four media: crayons, markers, colored pencils, and watercolors. All of these products are safe to use and are ASTM-D4236 approved. In the crayon, marker, and colored pencil sets there are 38 different colors, a twelve-lesson instruction book, and 12 project pages. The crayon and colored pencil sets also include a sharpener. The watercolor set has 24 colors and two brushes plus the instruction book and 12 project pages. In addition, this parent/teacher curriculum guide is a valuable resource that will enable you to participate in your student's learning experience with confidence.

AGE AND EXPERIENCE LEVELS

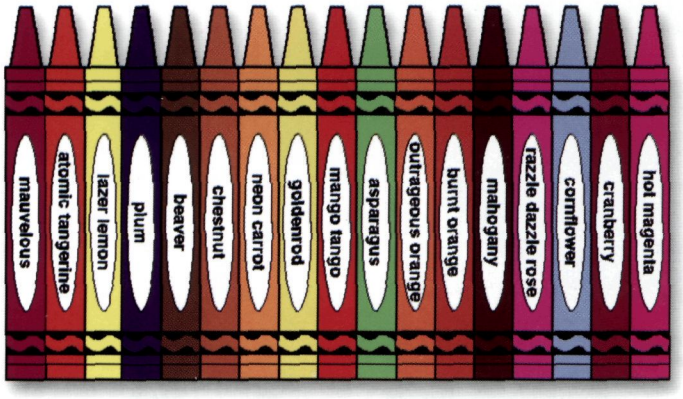
The recommended age for this series is 5 and up. We suggest students begin with the medium with which they are most familiar. Although the information taught in each set is similar, the images are designed to work optimally with that medium, so we recommend you stay within the sets. For example the images used for the crayon tend to be more appropriate for a younger child and the shapes are somewhat larger to accommodate the crayon. In the marker set the images are designed for a slightly older child and the more detailed images work better with a marker. When students have finished all four sets, they will have a basic knowledge of how different color values create 3-dimensional forms.

CREATIVITY VS. SKILLS AND KNOWLEDGE

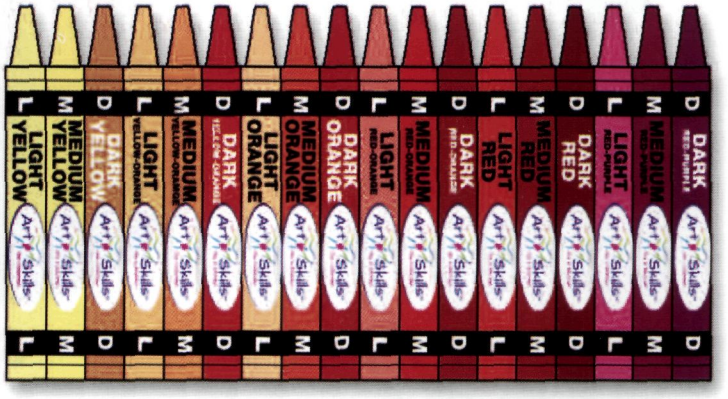
Some art educators emphasize that the focus of art should be solely on creativity. We at ArtSkills™ agree with the importance of being creative; however, we also believe that basic art skills are equally important. To succeed, a musician must first learn the mechanics of how to get the proper sounds (notes) from his instrument and know the sequence to play them. A ballerina must learn how to do each step and then the order in which to perform them. Why should creating a picture be any different?

THE COLORS

Most other color assortments available are made from a random selection of colors. The *Start Smart*® assortment is logical and arranged to correlate with the standard color wheel. The colors in each set are red, red-orange, orange, yellow-orange, yellow, yellow-green, green, blue-green, blue, blue-purple, purple, and red purple. Each color also has a light version (e.g. light red-purple) and a dark version (e.g. dark green), one on each side. By having the colors arranged logically and sequentially, the student can easily find the color and shade required and store it in its proper location when finished.



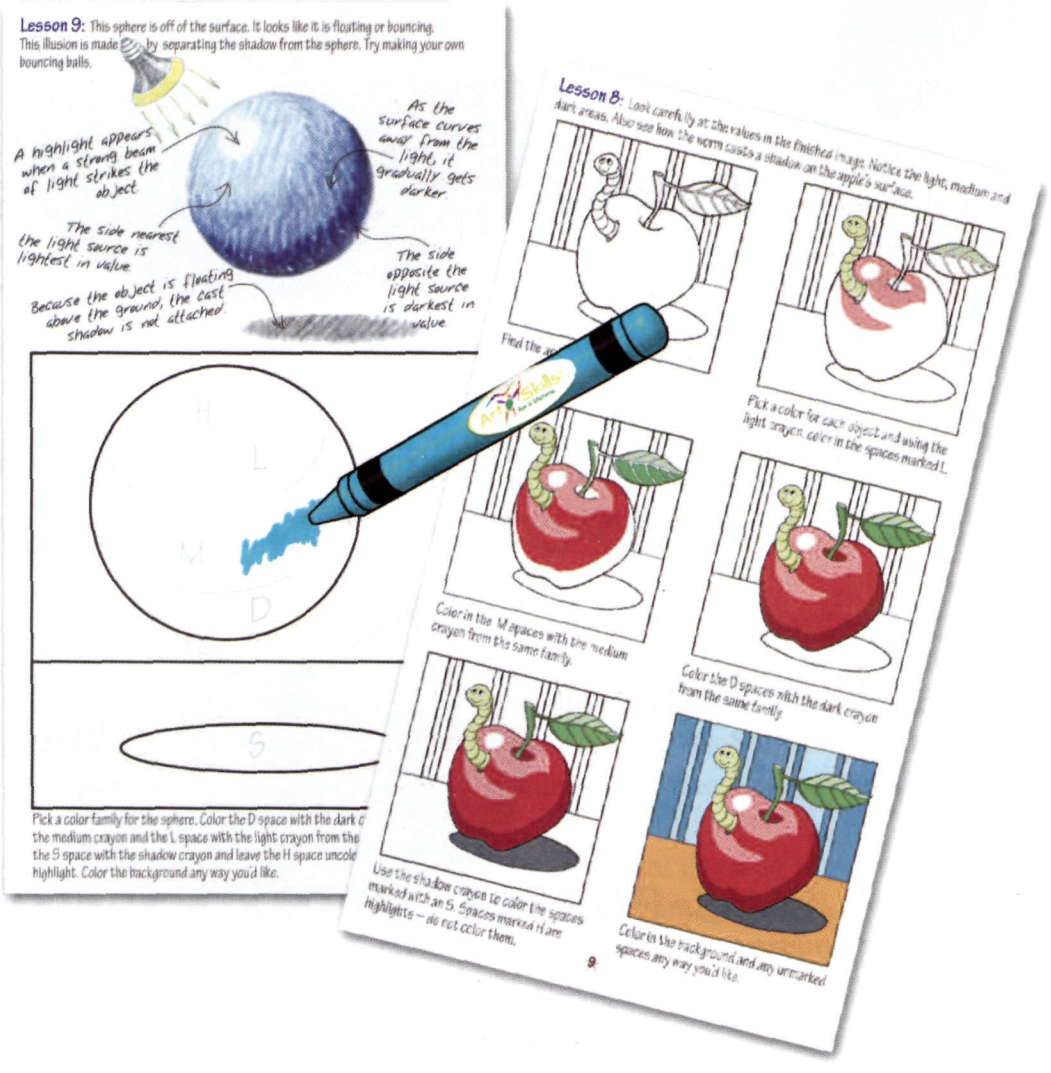
ARRANGEMENT OF STANDARD CRAYONS



ARRANGEMENT OF SMART COLORS

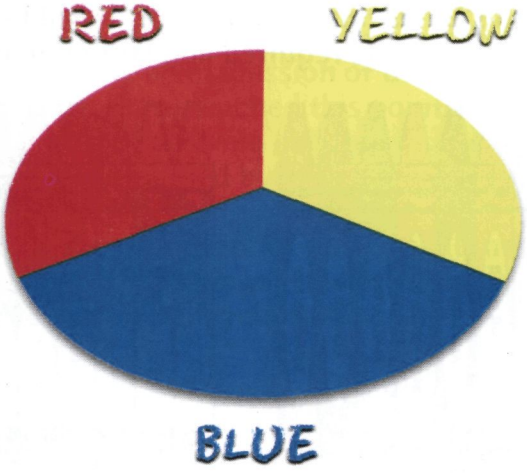
THE INSTRUCTION BOOKS

All four books in the series show how color can be used to create realistic images by understanding value and how the proper placement of different values makes a shape appear 3-dimensional. Each book has 12 lessons. The lessons teach how light shining on an object affects the color of an object. Each lesson is presented in several parts so that the sequence of color application can be easily understood. The lessons show where the light "L", medium "M", dark "D" and shadow "S" colors are applied. Each color tool is marked with "L" for light color, "M" for medium color, "D" for dark color, and "S" for the shadow color. This makes it simple for the student to see where the correct color should be placed. We explain the principles of highlights and shadows and how they affect the color by first using basic geometric figures to show the concepts and then applying this information to images that are fun and interesting for the student.

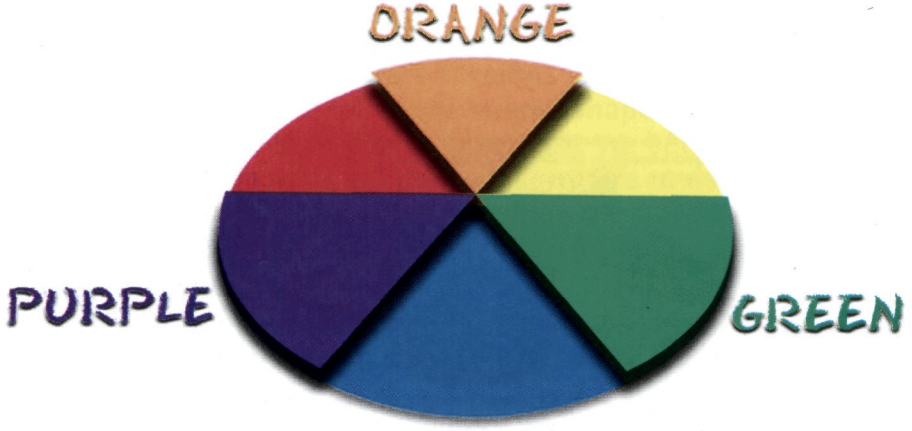


THE COLOR WHEEL

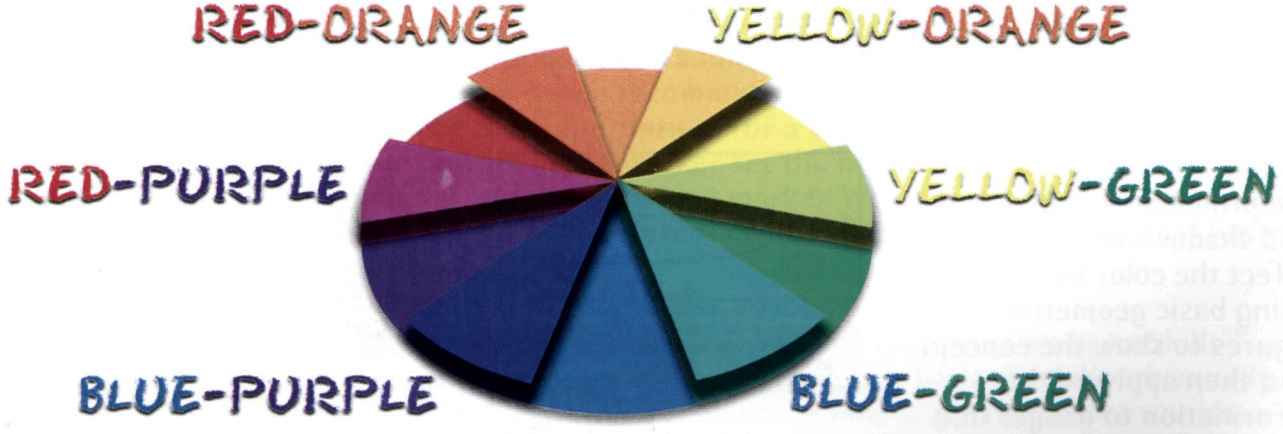
PRIMARY COLORS are the three basic hues from which all other colors are formed.



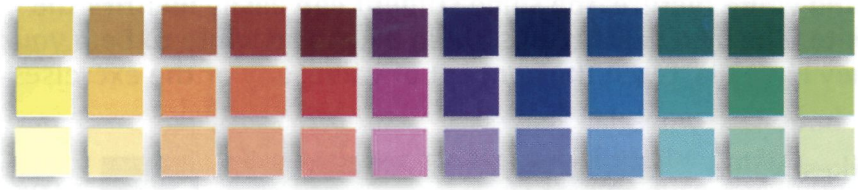
SECONDARY COLORS are formed by mixing two adjacent primary colors.



TERTIARY COLORS are formed by mixing a primary color with an adjacent secondary color.

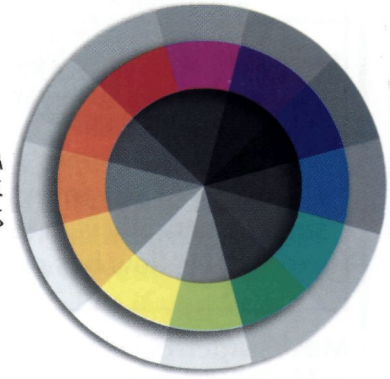


HUE, CHROMA, AND VALUE

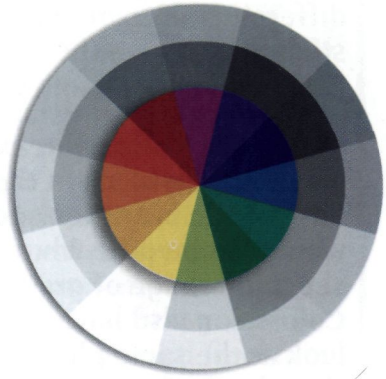


THESE HUES CAN BE ARRANGED IN A GRID FOR EASIER VIEWING.

LIGHT VALUE HUES



MEDIUM VALUE HUES



DARK VALUE HUES

To learn how to work with color, you need to understand that every color has three characteristics: **HUE, CHROMA, AND VALUE.**

HUE is the name we give to a color that describes its place on the color wheel (e.g. red or blue). It is often enough information to separate one basic color from another color. As an analogy, in the world of vehicles, to say car or bus or truck would be enough information to separate one vehicle from another.

VALUE is an additional description that tells us how light or dark a color is (e.g. light blue or dark green). We will discuss value in greater detail a little later.

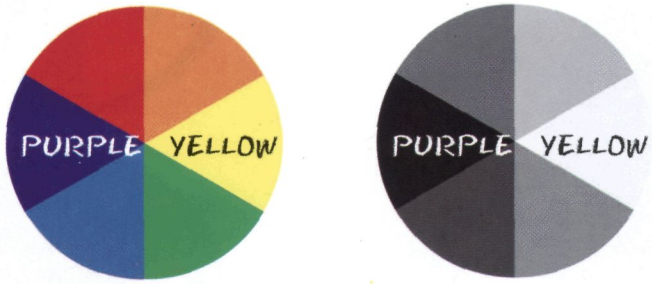
CHROMA is another characteristic of a color. It describes how bright or dull a color is (e.g. dull red or bright yellow). Neon shades of orange and yellow are examples of high-chroma colors. Low-chroma colors appear to be mixed with gray (e.g. the grass in the shadow of a tree is grayer and duller than the grass in the sunshine).

By combining these three characteristics, you can be very clear when describing a color (e.g. light, bright yellow-green). This is especially important when comparing one color to another (e.g. that pink is duller than the first; or that red is darker than the other red; or that green is bluer while the other is yellower). The eye can see hundreds of thousands of different colors. Naming each one is impossible but describing or comparing each one is much simpler when you understand hue, value, and chroma.

The Start Smart® series deals primarily with hue and value. The nomenclature used to name colors in the Start Smart® program are their actual names (based on their hue, value, and chroma) not arbitrary names. Cornflower might be cute but does not clearly communicate the color to everyone. Also, the color names on the labels of the Smart products are the colors that you achieve when you apply them to paper, not the colors as they appear to be in their unused form.

WHAT IS VALUE?

In the art world value is a term that defines the relative lightness or darkness of a color. There are two basic types of value:

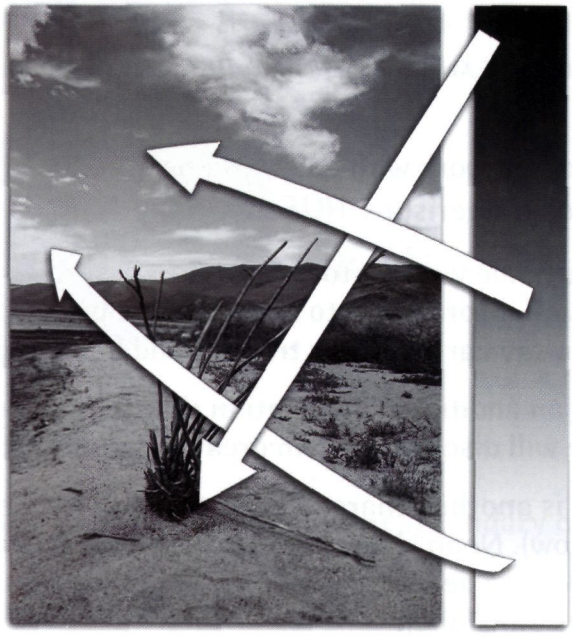


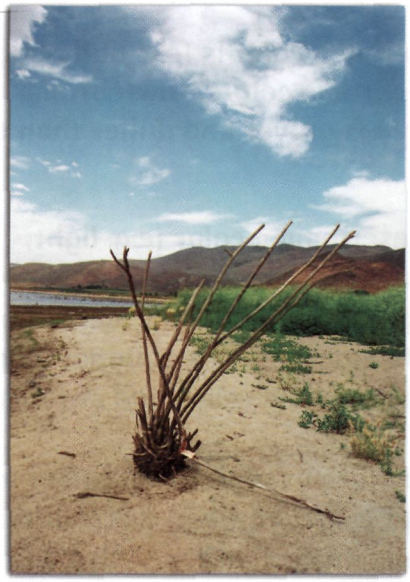
LOCAL VALUE refers to how light or dark the color of a surface actually is in relationship to other surfaces. For example, yellow has a much lighter local value than purple.

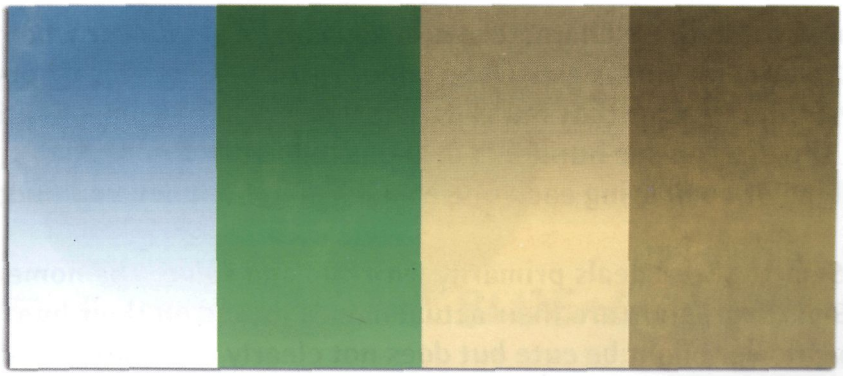
TONAL VALUE is the lightness or darkness of a surface that is modified by the effects of light, shade, and/or shadow on its form. Tonal values help to describe the form and give it a 3-dimensional appearance.

Most students recognize color by hue (name) and do not see the different values within that same color. When confronted with a black and white picture, the same student can easily identify the different values of black, gray and white. The next few lessons are in black and white to help your student visualize the values. When they have mastered the concept of value, any of the exercises can be repeated using color.

In this black and white photo, the darkest value would be the black in the shadow area at the base of the branches and the lightest value would be the pure white of the clouds. You can see a full range of gray values in between. Colors can also have different values. If you look at the same photo in color, you can see that the sky is a very light shade of blue nearest the horizon, but at the top of the picture, the blue is a much darker value. If you study the green shrubbery, you can see several shades (values) of green.







In order to draw realistically, the student must learn to see different values and their relationships.

CAST SHADOWS

Another way to add realism to your artwork is to use cast shadows. We have outlined the cast shadows in the coloring pages and marked them with an "S" for your student to fill in with the shadow color. When your student is ready to create an original drawing, adding cast shadows will add to the illusion of realism. There are a few basic concepts that will help him/her draw the cast shadows correctly, but the most important thing to understand is that the shadow is formed by the object blocking the light from hitting the background. Because the object is between the light source and the background, the cast shadow will always be on the opposite side of the light source.

Visualize the object falling onto the background (in the direction away from the light source) and then think about how you would trace its outline.

Although the shadow is shaped like the object, because it is lying on the ground, perspective makes it appear flatter.

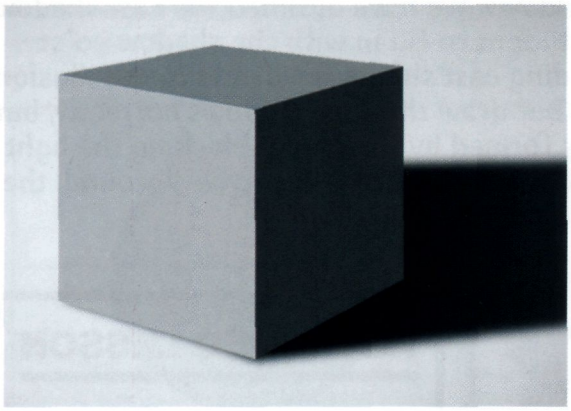
When the shadow falls across another object (like a wall), it will appear to bend or wrap around the object.

ADVANCED LESSON

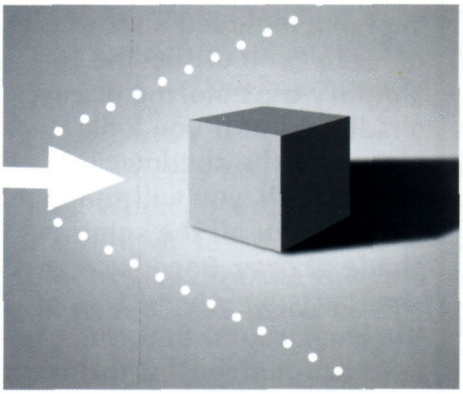
THE COLOR OF SHADOWS

We have included a shadow color in each of the kits to simplify the coloring of cast shadows; but if you look closely at the shadows in a photograph, you will see that they are not all the same shade of gray. Because a cast shadow is merely an area of the background that the light is not able to shine onto, it is the same color as the background, just a darker value. If your student is older and more skilled, he/she could first color the entire background (including the shadow area), then color over the cast shadow area with the shadow crayon to achieve a darker value of the background color. This will produce a more realistic appearance.

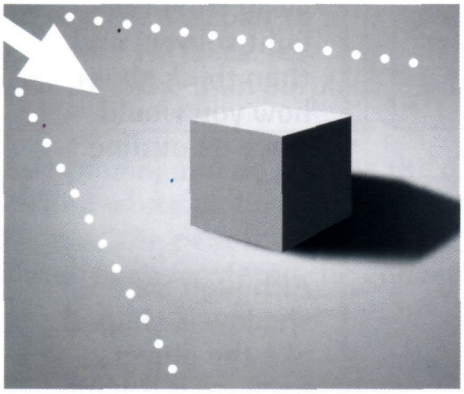
HOW LIGHT AFFECTS VALUE ... THE CUBE



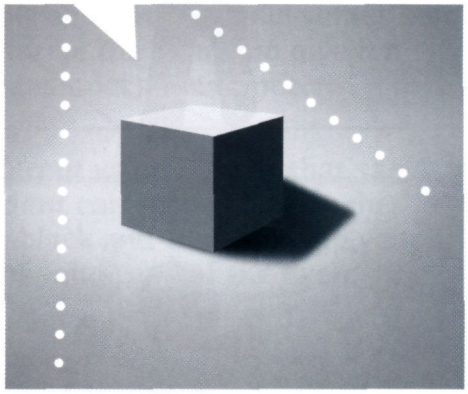
When you look carefully at an object that you know is all one color, why does it appear to be lighter on one side than the other? To understand, you need to pay attention to where the light on the object is coming from. The spotlight is shining down from the upper left in our example. As you can see, the side of the cube that is nearest to the light source is lightest and the other sides are darker because the light doesn't shine on them. This is why we have included three values of each color in the sets. By using the lightest color on the side facing the light, the darkest one on the opposite side, and the medium color between the two, you can achieve a 3-D effect.



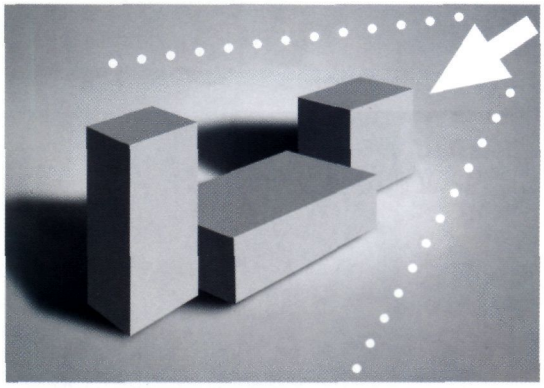
Notice that the light is shining from the left. This makes the left surface (which is nearest to the light source) a very light value. The top of the cube receives less light and is a medium value. The right side is farthest from the light (almost opposite) and is a very dark value. The cast shadow stretches off to the right, opposite the light source. Have the student draw this cube, indicate where the light is, and color it using the correct values. For a younger student, you may want to draw the outlines and let him/her color it.



Now we have moved the light to the upper left corner. Notice that the top of the cube is now the lightest value. The left side is medium, and the right side is the darkest value. See how the cast shadow changes position – it is still opposite the light source; but since the light source rotated upward, the shadow rotated downward. Let your student draw this new arrangement and color it. Make sure he/she indicates the light position.



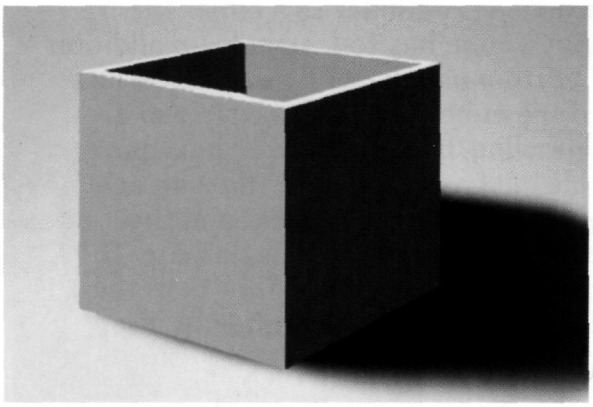
When we move the light source even higher overhead, it bathes the top with light so it appears as a much lighter value. The front left and right are much darker because neither one of them gets as much light as before. See what happens to the cast shadow. Have your student draw and color this set-up as before.



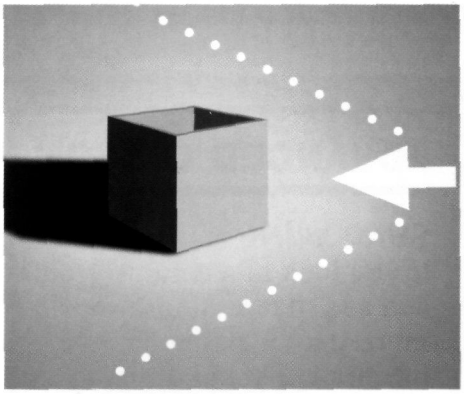
You can change the dimensions of the box to long and flat or tall and skinny – the same basic principles will still apply to the highlights and shadows. Armed with this knowledge, the student can draw any number of rectangular objects and render them realistically.

Try setting up a scene of your own with building blocks, a tissue box, or any 6-sided objects and a flashlight. Turn off the room lights and observe the lights and darks and how they change when you move your flashlight around.

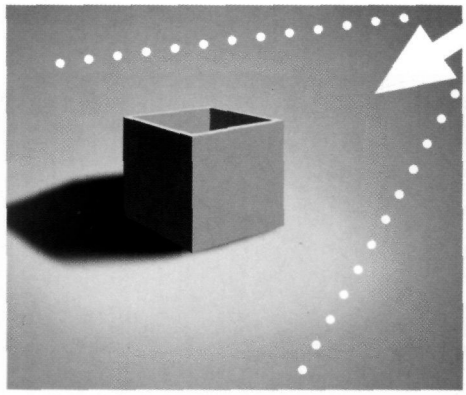
HOW LIGHT AFFECTS VALUE ... INTERIOR SPACES



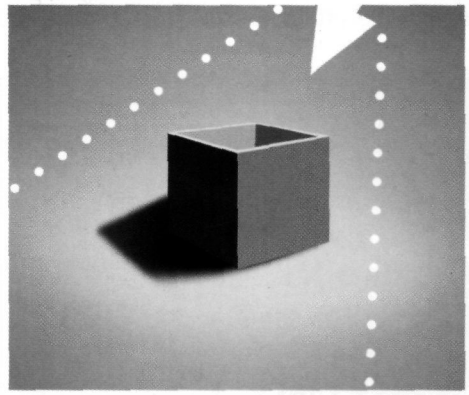
When you have a shape that is open (like a box) you must pay close attention to the lights and darks in the interior space. In this example the light is coming from the upper right corner. The top (edges) and the right outside surface are lightest because the light hits them. The left outside is the darkest value because it is facing away from the light. In the inside, it is the right surface that is opposite the light and is darker. The left surface gets more direct illumination and so is a lighter value.



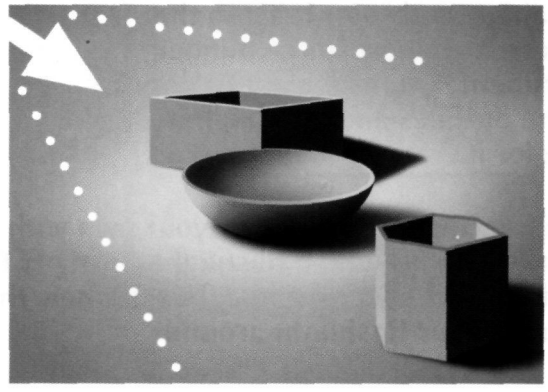
Notice that the light is shining from the right. This makes the right surface (which is nearest to the light source) lightest in value. The top edges of the box receive less light and are a medium value. The left side is farthest from the light (almost opposite) and is a very dark value. Inside the box, the right surface is darkest because it blocks out the light. Some light is cast on the left surface which makes it a lighter value. The cast shadow is opposite the light source. Have the student draw this box, indicate where the light is, and color it using the correct values. For a younger student, you may want to draw the outlines and let him/her color it.



Now we have moved the light to the upper right corner. Notice that the top of the box is now the lightest value. The right side is medium and the left side is the darkest value. The cast shadow rotates and is still opposite the light source. Now the inside surfaces receive more light and are a lighter value, but the right side is still darker. Let your student draw this new arrangement and color it. Make sure he/she indicates the light position.

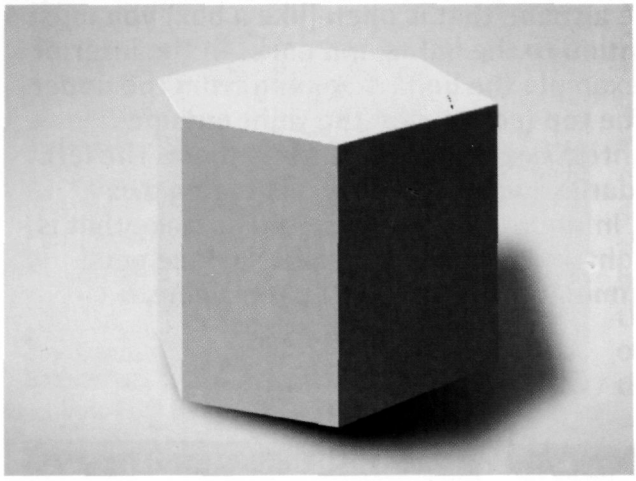


When we move the light source even higher overhead, it bathes the top with light so it appears as a much lighter value. The front left and right are much darker because neither one of them gets as much light as before. Now the inside is flooded with light and becomes the lightest value. Have your student draw and color this set-up as before.

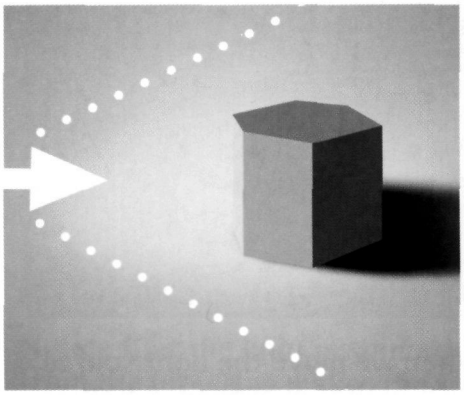


Using these principles, your student can draw a bowl, a wagon, or any other object with an open interior space and render it realistically. You may want to wait until he/she completes the next few lessons before attempting a more difficult rounded object like a bowl.

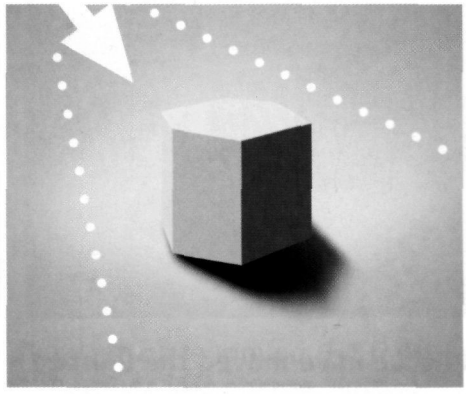
HOW LIGHT AFFECTS VALUE ... THE HEXAGON



A hexagonal form is very similar to a cube. The difference is that a cube has four panels (in addition to the top and bottom panels) while a hexagon has six. Only two of the cubes panels are visible in a 2-dimensional drawing, but three of the hexagon's panels are visible. Just as in the cube, the surface nearest the light source will be lightest and the surface farthest from the light will be darkest. The surface between the two gets more light than the dark one and less light than the light one so is a medium value (between the two).



Notice that the light is shining from the left. This makes the left surface (which is nearest to the light source) a very light value. The hexagon-shaped top receives less light and is a medium value. The right side is farthest from the light (almost opposite) and is a very dark value. The surface between them is a medium value (midway between the other two). The cast shadow, as usual, mirrors the angle of the light source. Have the student draw this shape, indicate where the light is, and color it using the correct values. For a younger student, you may want to draw the outlines and let him/her color it.



Now we have moved the light to the upper right. Notice that the top of the shape is now lighter. The right side is lightest, the left side is the darkest value, and the middle panel is a medium value. The cast shadow changes position to be opposite the light source. Have your student draw the shape again indicating the new light position and color it.

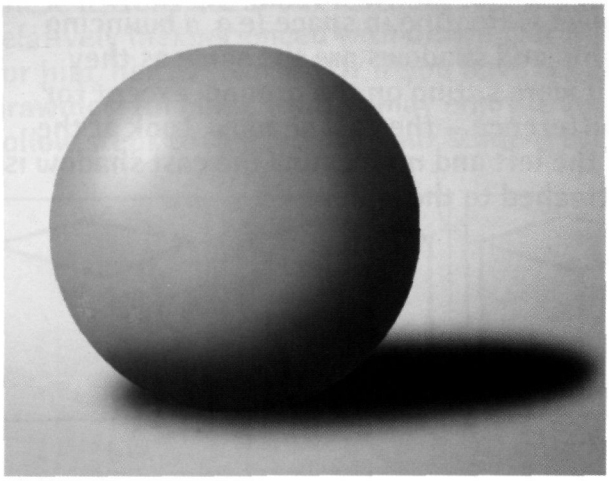
Try setting up a scene of your own with cups, jars, paper towel rolls, pencils, and a flashlight. Turn off the room lights, and observe the lights and darks and how they change when you move your flashlight around.

ADVANCED LESSON

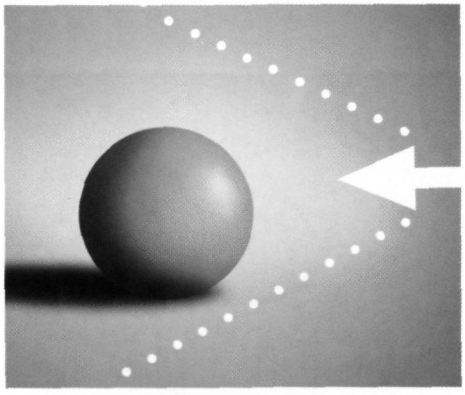
SHADOWING COLUMNS

If you look at a column, you will see that it is nothing more than a modified hexagon. Instead of being divided into six panels around the circumference, it has many narrow panels. If you follow the same guidelines, you will know to make each panel a darker value than the last as they travel away from the light source. If the column is smooth (no panels), see the instructions in the next lesson (the sphere) to learn how to blend the values together.

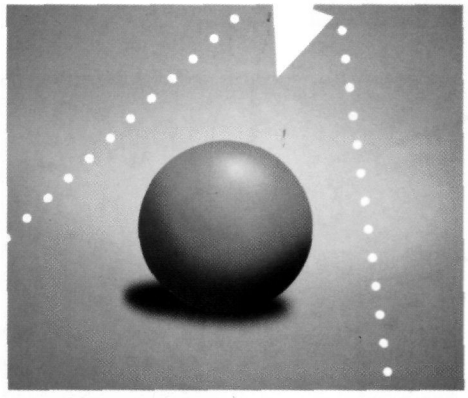
HOW LIGHT AFFECTS VALUE ... THE SPHERE



Look carefully at the values on this sphere. There are no hard edges separating the sides like the cube has; instead the surface is rounded. The values don't end abruptly from one side to the next; instead they fade from light to dark. To achieve this gradual shift in value, practice overlapping the colors somewhat. With crayons and pencils you can press harder to make the shade darken gradually. Adding more water to the paint will let you fade the color gradually. Markers don't allow a gradual fade out unless you crosshatch (use a series of lines placed close together and crossing at angles). See the advanced lesson below for more on crosshatching.



See how the light is shining from the right. This makes the right surface (which is nearest to the light source) a very light value. As the surface curves away from the light, it gradually gets darker on the left. Often on a rounded surface like this, you will see a round or oval highlight at the point where the light strikes the sphere most directly. This can be left white or colored in very lightly with the light crayon, depending on how close and strong the light source is. The cast shadow is stretching off to the left, away from the light. Have the student draw this shape, indicate where the light is, and color it using the correct values. For a younger student, you may want to draw the outlines for him/her to color.

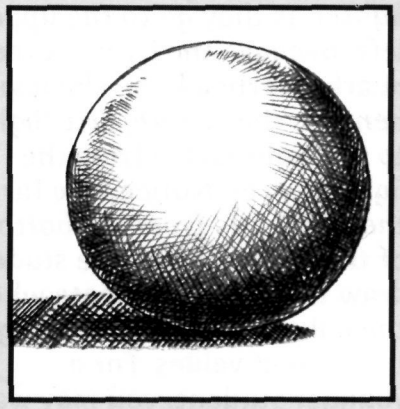


When the light moves to the upper right, the highlight moves with it. Notice that the top right of the shape is now the lightest value. The value becomes gradually darker as the surface curves away from the light. The cast shadow changes position to be opposite the light source, and ends up more directly underneath the sphere. Have your student draw the shape again, indicating the new light position and color it, practicing fading the values smoothly.

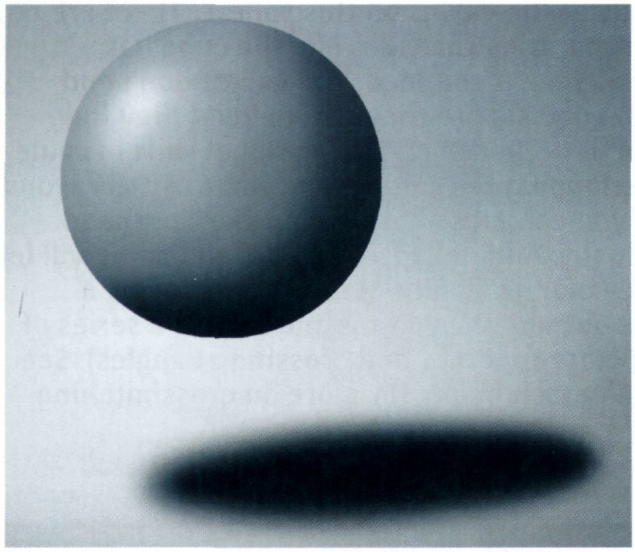
ADVANCED LESSON

CROSSHATCHING

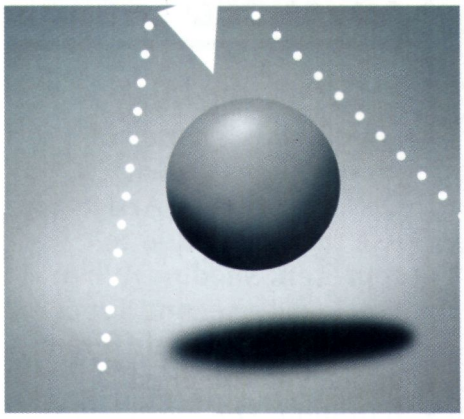
Hatching is a series of parallel lines drawn closely together. Artists use this technique to represent shading. When you layer a second set of lines on top, at a different angle, you are cross-hatching. The more layers of lines you add, the darker the value becomes. You can achieve a wide range of values using this technique.



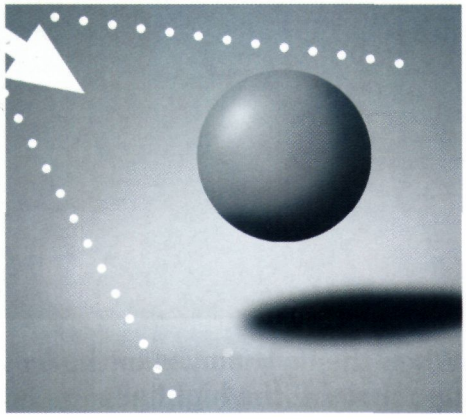
HOW LIGHT AFFECTS VALUE ... FLOATING OBJECTS



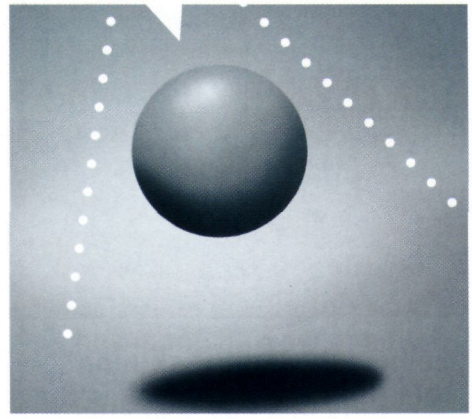
When an object is floating in space (e.g. a bouncing ball), the lights and shadows are the same as they would be if it were sitting on the ground, except for one major difference – the cast shadow. Look at the example on the left and notice how the cast shadow is no longer attached to the sphere.



When the light is coming in from the left, the highlights and shadows on the sphere follow the same format as in the previous lesson, just in reverse. The darkest values are on the lower right and fade gradually lighter as they go to the upper left. Because the light source is nearly overhead, the shadow is beneath the sphere, just slightly to the right (away from the light source). Notice how far the shadow is from the bottom of the sphere. Have the student draw this shape, indicate where the light is, and color it using the correct values. For a younger student, you may want to draw the outlines and let him/her color it.



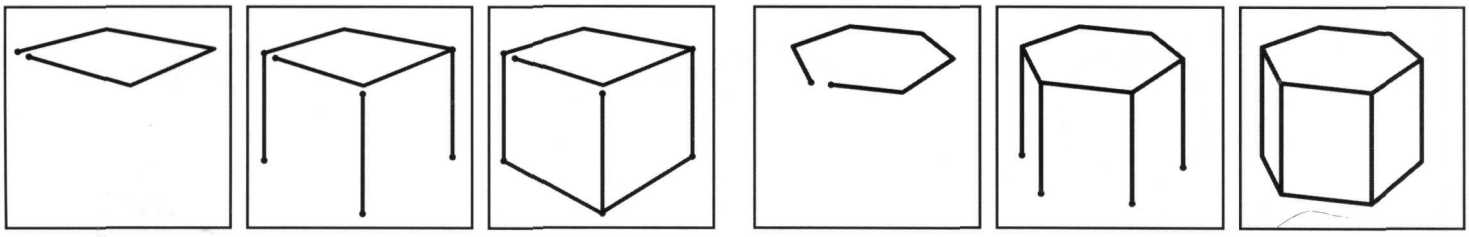
When the light moves lower and more to the left, the highlight moves with it. Notice that the left of the shape is now the lightest value. The value becomes gradually darker as the surface curves away from the light. The cast shadow shifts further to the right and is still opposite the light source. Have your student draw the shape again indicating the new light position and color it, practicing fading the values smoothly.

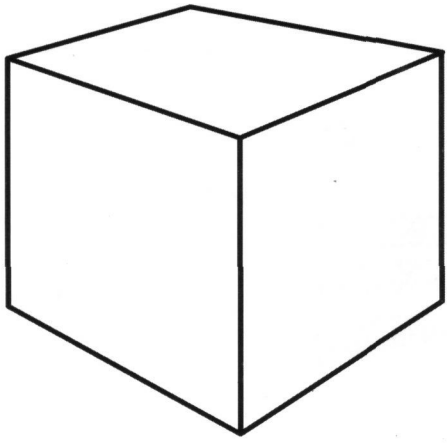


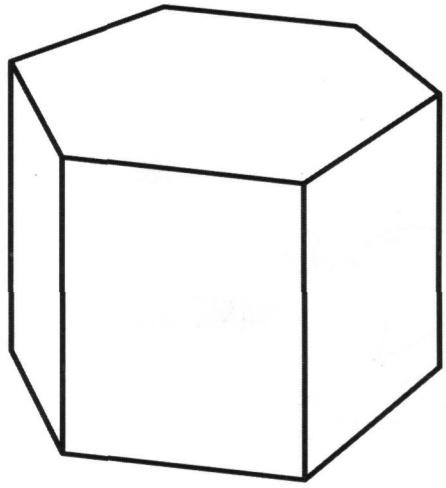
See what happens when the sphere is moved higher off the ground; the cast shadow is farther away. Have your student draw and color this set-up as before.

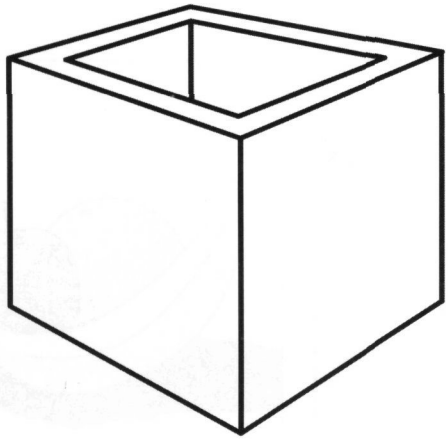
SOME TIPS ON DRAWING THE SHAPES

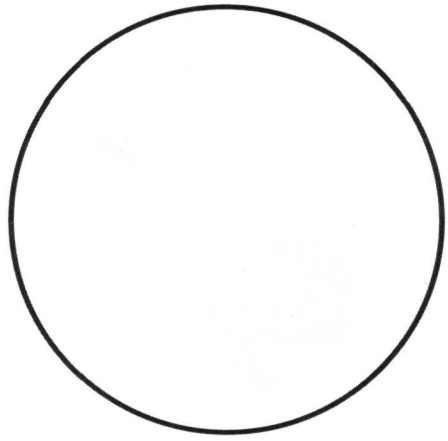
These lessons are about learning values and how to use them. If your student is very young or relatively inexperienced with drawing, it will be less frustrating for him/her if you draw the shapes for him/her to color in. Or if you have access to a copy machine, you may want to copy these drawings. An older student may enjoy drawing the shapes him/herself. Here are a few easy-to-follow steps to help you or your student draw the shapes.





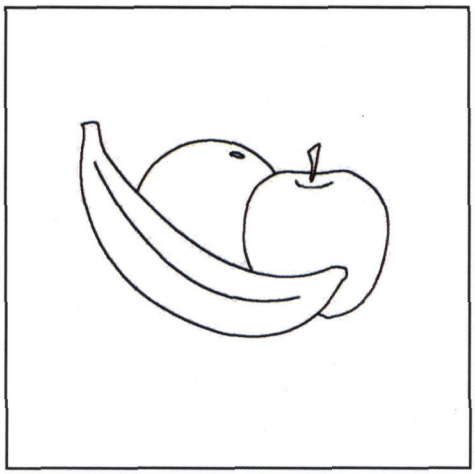




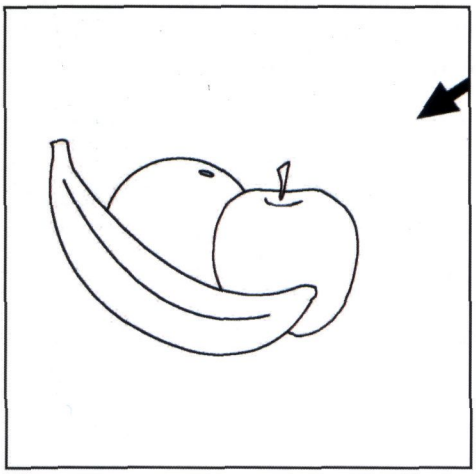


APPLYING VALUE TO YOUR OWN ARTWORK

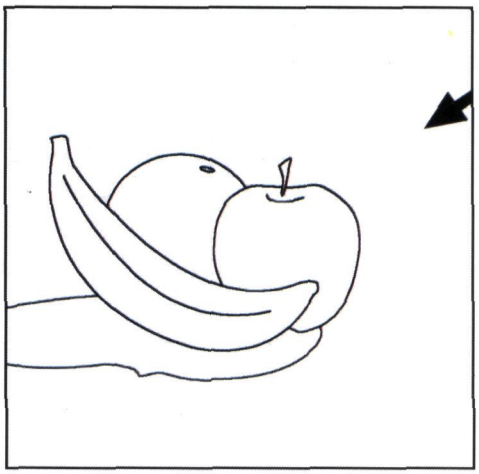
Once your student has mastered the lessons in the sets, he/she can draw whatever he/she likes and apply the same principles of values to make a realistic, 3-dimensional drawing.



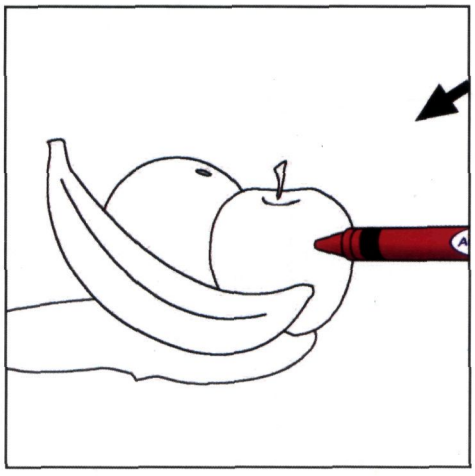
First draw a picture. Keep the image simple in the beginning.



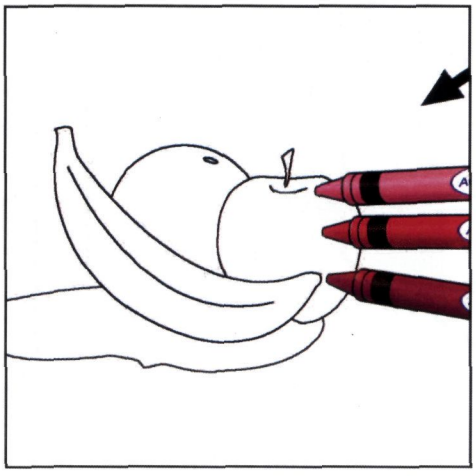
Then decide where you want the light source to be located and mark it with a small arrow.



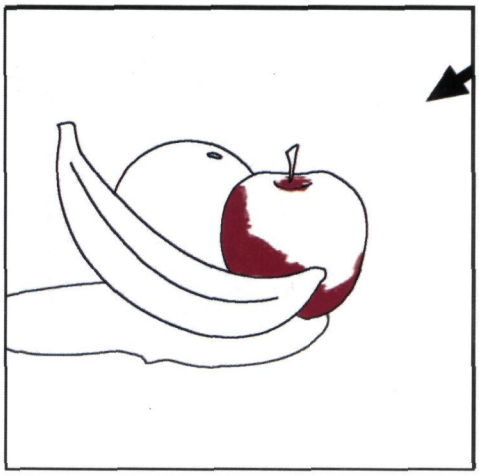
Draw the cast shadow in the correct position.



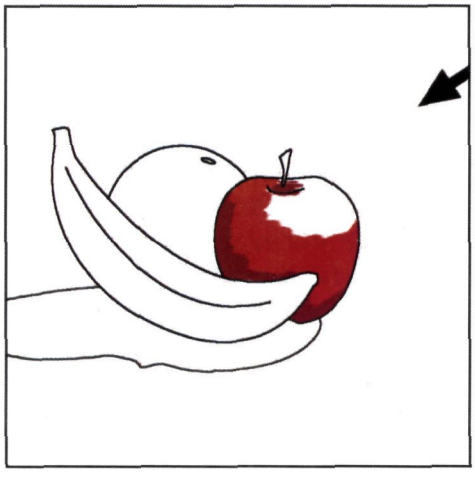
Select a medium (watercolor, marker, crayon or colored pencil) and pick a color for your object.



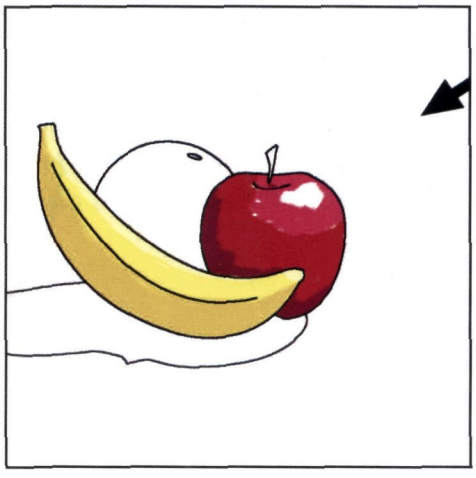
Pick out the 3 shades of your color (or mix them with the watercolors).



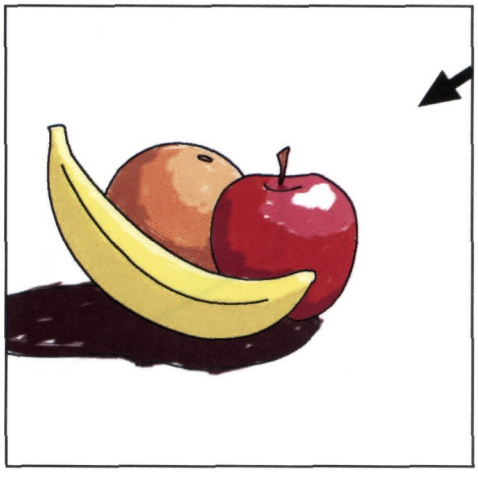
Color in the area that would be dark with the "D" color.



Color in the area that would be medium with the "M" color.



Color in the area that would be light with the "L" color. Repeat L, M, D steps with other objects.



Color in the cast shadow with the "S" color.